

**FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

PROJECT TITLE: Preparation of manuscripts on brown bear ecology and management in arctic Alaska and pharmacokinetics of Telazol in brown bears

PRINCIPAL INVESTIGATOR: Harry V. Reynolds.

COOPERATORS: Dr. Gerald Garner (deceased), USGS, Alaska Science Center; Patricia E. Reynolds, Arctic National Wildlife Refuge, Fairbanks; Dr. John Blake, DVM, University of Alaska Fairbanks, Dr. Hugh Semple, University of Saskatchewan, Saskatoon

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR: W-33-2

PROJECT NUMBER: 4.32

WORK LOCATION: Game Management Unit 26B and C, coastal plain and foothills of the Arctic National Wildlife Refuge; and, Game Management Unit 20A, northcentral Alaska Range

STATE: Alaska

PERIOD: 1 July 2003–30 June 2004

I. PROGRESS ON PROJECT OBJECTIVES SINCE PROJECT INCEPTION

OBJECTIVE 1: Prepare a scientific manuscript on population dynamics and sustainable mortality rates of females of an arctic brown bear population.

We collected data necessary to describe parameters of brown bear population dynamics in the northern foothills and coastal plain of the Arctic National Wildlife Refuge where the potential for oil development is controversial and has national implications. We captured and monitored bears to assess population growth rates for females there from 1982-1990. During this report period, we collated and analyzed this data to provide input parameters for application of a Lotka-Euler model to determine sustained yield for females.

Edited Oct-04

Please note: This is a progress report and the information contained within may be further analyzed and refined.

OBJECTIVE 2: Prepare a scientific manuscript on the deterioration rates of immobilizing drugs in brown bears

Blood samples for determination half-life and deterioration rates of the widely used drug tiletamine/zolazepam (Telazol®) were collected from 26 grizzly bears during captures in the north central Alaska Range during 1997. Of these 18 could be used for the study and were sent to the pharmacology laboratory at the University of Saskatchewan for analysis. Data analysis of pharmacology is complete, and interpretation of data is nearly complete.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

JOB 1: Prepare the following 2 manuscripts for publication in scientific journals:

1) Calculation of natural and human caused mortality rates of female brown bears in arctic Alaska.

We completed analysis of data on mortality of female brown bears during this reporting period. The first draft of the manuscript is nearing completion, anticipated submission date is November 2004. A summary of the data analysis follows.

Survival rates of cubs were only 44%, which is very low, but once females reached adult age, it remained very high at 98%. Based on staggered-entries of this data, (Pollack et al. 1989), Kaplan–Meier calculation of survival to mean age at first parturition was 0.18 (95% CI = 0.12–0.24) and yield for all females was estimated at –1.9% (95% CI = -14.06–+5.16) with a lambda of 0.9812 (95% CI = 0.8735–1.0491), indicating a slightly declining population. Cub mortality rate during some years was the primary factor affecting the model's performance in calculation of yield of females. Since cub mortality can be highly variable depending on short-term environmental conditions, and related density estimate studies in the region do not indicate a decline in the population, it is not likely that this population is in a state of decline.

2) Pharmacokinetics of the immobilization drug Telazol® (tiletamine hydrochloride/zolazepam hydrochloride) in brown bears in Alaska.

We completed analysis of data on the half-life of tiletamine/zolazepam (Telazol®) during this reporting period. We began work on a manuscript which should be completed by December 2004. Based on the analysis, the half-life of tiletamine/zolazepam (Telazol®) used to immobilize brown bears was approximately 2 hours, indicating that the time necessary to clear the drug from their system would be less than 24 hours.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

None

IV. PUBLICATIONS

No manuscripts were submitted for publication.

V. RECOMMENDATIONS FOR THIS PROJECT

None.

VI. APPENDIX

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VII. PROJECT COSTS FOR THIS SEGMENT PERIOD

FEDERAL AID SHARE \$37,019 + STATE SHARE \$ 12,339 = TOTAL \$ 49,358

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APPROVAL DATE: _____